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RxNav: Providing Standard Drug Information

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RxNav[1] is a browser for *RxNorm*[2], the NLM repository of standard names for clinical drugs. *RxNav* displays links from clinical drugs, both branded and generic, to their active ingredients, drug components and related brand names. The current dataset (February 28, 2006) comprises 5,570 ingredients, 10,788 brand names, 22,724 clinical drug components, 29,734 clinical drugs, 17,149 branded drugs, 16,447 branded drug component, 13,516 clinical drug forms, 13,035 branded drug forms and 140 dose forms. *RxNorm* is one of a suite of designated standards for use in U.S. Federal Government systems for the electronic exchange of clinical health information.

Since its introduction at Medinfo 2004, *RxNav* has been successfully deployed for almost two years, with an average of about 20 users per day. Based on the feedback from the community, *RxNav* makes constant improvements. Today, it provides a variety of features that facilitates browsing standard drug information.

Data Access. *RxNav* provides direct access to the *RxNorm* data. The data is extracted from the *RxNorm* monthly release file and loaded into a MySQL database for access by the *RxNav* server. Because *RxNorm* data are not stored locally on the user's computer, data updates of the *RxNorm* data are automatically reflected in *RxNav* in a timely manner.

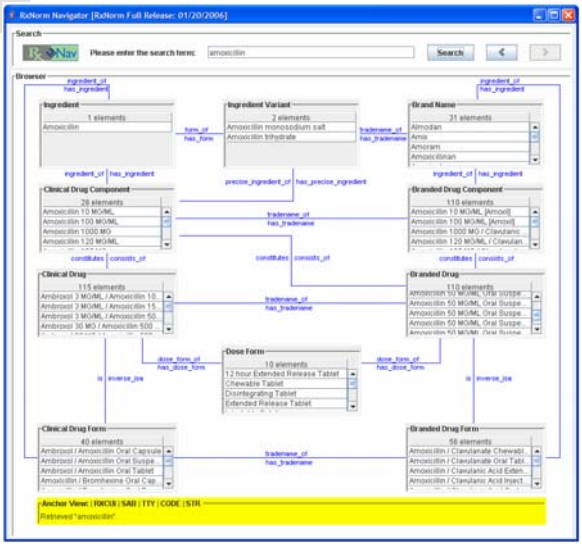
Graphic User Interface. *RxNav* displays graphically all the relevant entities and the relations among them. Users can thus focus on a particular aspect (e.g., ingredient) while maintaining the overall perspective. Users may open any component table in a separate, resizable window, making it possible to see the entire content of large tables. A "back" navigation button allows users to access previously returned results.

Search on Different Aspects. Every aspect of the *RxNorm* database can be queried through *RxNav*, including the names and codes of drugs and components in the drug resources referenced by, but not included in, *RxNorm*. Spelling suggestions are offered when no exact match is found in *RxNorm* for a given input term.

Open and Service Oriented Architecture. *RxNav* is a Java-based, standalone application. Its architecture uses a number of open-source software components including Apache, Axis and Tomcat, and intends to be flexible, extensible and efficient. Its architecture also follows the service oriented philosophy. The workflow of *RxNav* consists of a number of reusable components. The spell checking module and the data retrieval module are both implemented as web services, which can be discovered and used by other applications.

Easy Deployment for the Client. *RxNav* employs Java WebStart as its distribution mechanism. The application is automatically installed locally to the user's computer and started within the security boundary as the client accesses the *RxNav* website. The standard port 80 is used for the communication between the *RxNav* client and NLM's server. Software updates are automatically downloaded when available.

In the future, an application programming interface (API) providing fine-grained control over *RxNorm* data retrieval will be released. Links to other drug information services (e.g., drug labeling information in *DailyMed* and personalized medication lists) will be added.



RxNav screenshot for Amoxicillin

[1] http://mor.nlm.nih.gov/download/rxnav/
[2] http://www.nlm.nih.gov/research/umls/rxnorm_main.html